

CLAIMS

1. A fuel for motor vehicles comprising an emulsion between water and a liquid hydrocarbon, and an anti-cavitation additive, including a copolymer comprising  
5 20-80% in moles of units containing at least one carboxylic group and 80-20% in moles of units deriving from at least one monomer having an ethylene unsaturation, and wherein at least 20% in moles of the carboxylic groups is in the form of at least one derivative  
10 selected from carboxylate salt, ester, amide and imide.
2. The fuel for motor vehicles according to claim 1, wherein the copolymer has an average molecular weight Mw ranging from 700 to 3000.
- 15 3. The fuel for motor vehicles according to claim 1 or 2, wherein the carboxylic groups present in the copolymer are partially or totally salified by means of a neutralization reaction carried out with an inorganic or organic base.
- 20 4. The fuel for motor vehicles according to claim 3, wherein the base is selected from: hydroxides of alkaline or alkaline earth metals, ammonium hydroxide or quaternary ammonium hydroxides, sodium and/or potassium carbonates and bicarbonates, C<sub>1</sub>-C<sub>30</sub> aliphatic alkyl amines.  
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5. The fuel for motor vehicles according to claim 1 or 2, wherein the carboxylic groups present in the copolymer are partially or totally esterified by means of an alcohol or a polyol with a low number of carbon atoms.
- 5 6. The fuel for motor vehicles according to claim 1 or 2, wherein the carboxylic acid groups present in the copolymer are partially or totally transformed into amide or imide groups by means of thermal treatment in the presence of a primary or secondary aliphatic amine
- 10 with a low number of carbon atoms.
7. The fuel for motor vehicles according to any of the previous claims, wherein the units containing at least one carboxylic group derive from a C<sub>3</sub>-C<sub>10</sub> aliphatic monocarboxylic acid having an ethylene unsaturation,
- 15 or from a C<sub>4</sub>-C<sub>10</sub> aliphatic dicarboxylic acid having an ethylene unsaturation.
8. The fuel for motor vehicles according to any of the previous claims, wherein the monomer having an ethylene unsaturation is selected from: C<sub>2</sub>-C<sub>12</sub>  $\alpha$ -olefins, C<sub>1</sub>-C<sub>6</sub> alkyl esters of (meth)acrylic acid, vinyl ethers
- 20 and vinyl esters.
9. The fuel for motor vehicles according to any of the previous claims, wherein the liquid hydrocarbon has a viscosity at 40°C ranging from 1 to 5.3 cSt and a density at 15°C ranging from 0.75 to 1.1 kg/dm<sup>3</sup>.
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10. The fuel for motor vehicles according to any of the previous claims, wherein the water is present in a quantity ranging from 2 to 40% by weight, with respect to the total.
- 5 11. The fuel for motor vehicles according to any of the previous claims, wherein the emulsion is of the water-in-oil type.
12. The fuel for motor vehicles according to claim 11, wherein the emulsion comprises at least one emulsifying agent whose concentration ranges from 0.1 to 10% by weight with respect to the total.
- 10 13. The fuel for motor vehicles according to any of the previous claims, wherein said at least one emulsifying agent has an HLB (Hydrophilic-Lipophilic Balance) value ranging from 2 to 10.
- 15 14. The fuel for motor vehicles according to claim 13, wherein said at least one emulsifying agent has an HLB (Hydrophilic-Lipophilic Balance) value ranging from 3 to 8.
- 20 15. The fuel for motor vehicles according to any of the previous claims, wherein said at least one emulsifying agent is a product obtained by the reaction of: (a1) a polyolefinic oligomer functionalized with at least one group deriving from a dicarboxylic acid, or one of its derivatives; with (a2) a polyoxy-alkylene comprising
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linear oxy-alkylene units, said polyoxy-alkylene being bound to a long-chain alkyl group optionally containing at least one ethylene unsaturation.

16. The fuel for motor vehicles according to any of the  
5 claims from 1 to 14, wherein said at least one emulsifying agent is a product obtained by the reaction of (b1) a carboxylic acylating agent containing a hydrocarbon chain having from 50 to 500 carbon atoms, with (b2) ammonia or an amine.
- 10 17. A process for feeding an internal combustion engine which comprises: feeding a fuel to a combustion chamber of said engine; igniting said fuel in said combustion chamber, wherein said fuel comprises an emulsion between water and a liquid hydrocarbon, and an anti-cavitation additive according to any of the claims  
15 from 1 to 16.
18. The process according to claim 17, wherein the internal combustion engine is a diesel cycle engine.